

November 2, 2005

Mr. Jonathan Bishop
Executive Officer
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013
VIA Fax (213) 576-6640

Re: Comments concerning the Redondo Beach Generating Station Proposal for Information Collection

Dear Mr. Bishop:

On behalf of Heal the Bay and Santa Monica Baykeeper, we submit the following comments on the Redondo Beach Generating Station (RBGS) Proposal for Information Collection ("PIC"), dated July 29, 2005. We have reviewed the PIC and believe that it does not meet the requirements of Clean Water Act §316(b) and Porter-Cologne §13142.5. The PIC as drafted will not ensure the protection of the region's coastal waters. Information collected at this stage will form the critical basis for determining compliance with these federal and state laws, and any further policies adopted by the State Water Resources Control Board. Thus, we urge the Los Angeles Regional Water Quality Control Board ("Regional Board") to examine the PIC closely and request the necessary revisions to ensure that it will result in a rigorous and thorough justification for the plant's impacts on coastal ecology. This is necessary to protect coastal waters in this region from the ongoing impacts of outdated once through cooling technology.

The PIC's two most glaring errors are its failure to evaluate alternative cooling technologies and its failure to consider cumulative impacts (especially given the high ecological value of the Santa Monica Bay, closely sited power plants in the bay, and ecological impacts from multiple uses in this region). The Executive Officer of the Regional Board has discretion to require these analyses under both State and Federal law. The primary purpose of the PIC is to provide information on which to base future decisions regarding the best compliance option for Clean Water Act §316(b). The PIC is plainly deficient as it preordains RBGS's preferred path of compliance without a basis for this decision. The PIC must be written in a manner that proposes to evaluate all compliance alternatives. This is critical so that the regulator and operator may then use the subsequent information to choose the best alternative. Without a thorough evaluation of all compliance alternatives, compliance decisions will be biased and uninformed.

In addition to these general comments, we have set forth several specific concerns regarding the proposed PIC.

1. The PIC fails to include evaluation of closed-cycle cooling and other environmentally preferred compliance alternatives

The PIC fails to evaluate alternative cooling options for compliance with Clean Water Act §316(b). Under the Phase II rule, PICs are prerequisites to meeting the requirements of three of

five potential compliance options.¹ While information collected pursuant to an approved PIC is the basis for selecting among these alternatives, the PIC should not be designed to satisfy the preconceived objectives and preferred alternative of the plant operator. This makes a mockery of the exercise. Instead, information from studies proposed in a PIC is necessary to inform the regulatory agency and the plant operator about the feasibility and appropriateness of different mitigation approaches.

The RBGS PIC improperly rearranges this order. The PIC identifies restoration as the preferred compliance alternative, and uses this preference to defend a limited analysis of alternative cooling technologies. Under the Phase II rule, a plant operator's preferred compliance option does not justify providing incomplete analyses of all available technologies. For example, after completing studies identified in the PIC, if a plant operator views restoration in a favorable light, the operator must demonstrate to the Executive Officer how the operator has "evaluated the use of design and construction technologies and/or operational measures for [the] facility and [explain how] restoration would be more feasible, cost-effective, or environmentally desirable."² How is the operator to make this showing without sufficiently broad studies designated in the PIC?

Moreover, the Phase II rule vests broad discretion, *but also great responsibility*, in the Executive Officer. When a facility requests a site-specific determination of BTA, the Executive Officer is allowed to "request revisions to the information submitted by the facility in accordance with §125.95(b)(6) if it does not provide an adequate basis for you to make this determination."³ This broad discretion to request information complements the obligation imposed on the Executive Officer to ensure that the ultimate site-specific compliance requirements "achieve an efficacy that is, in [the Executive Officer's] judgment, *as close as practicable to the applicable performance standards...*"⁴ This ultimate decision can only be rational and legally defensible if it is made on the basis of *complete* information. Thus, it benefits the Executive Officer (as well as interested stakeholders) to request complete information at this stage of the process.

An example from another state should further persuade the Regional Board of the prudence of this course. The New York State Department of Environmental Conservation, New York's steward of the Clean Water Act, requires the evaluation of all alternative cooling technologies in detail, including closed-cycle cooling for Clean Water Act §316(b) studies. The evaluation must include a detailed description, analysis of the engineering feasibility, assessment of mitigative benefits (reduction of impingement and entrainment), cost analysis, implementation timeline, and evaluation of adverse environmental impacts caused by the alternative.⁵ Obtaining comprehensive information from these analyses is a necessary prerequisite to intelligently and rationally approving a given compliance option as required by law. It is unclear why the Regional Board, California's steward of the Clean Water Act, would willingly reject a full report on the potential of using state-of-the-art technology at RBGS. As the example from New York

¹ 40 CFR §125.95; 69 Fed. Reg. 41592-41593

² 69 Fed. Reg. 41689

³ 40 CFR §125.98(b)(1)(vi)

⁴ *Id.* [emphasis added]

⁵ New York Department of Environmental Conservation (January 24, 2005) Letter to Benjamin H. Grumbles, USEPA, pp.4-5

shows, there is no question as to whether federal law allows the Regional Board to request this full report. California law further buttresses this grant of discretion.⁶

2. Cumulative impacts are ignored

The PIC fails to include an assessment of cumulative impacts associated with nearby plants also utilizing once-through cooling. The facilities at Scattergood, El Segundo Generating Station, and RBGS are located in close proximity to one another. This raises some concern, as each is impacting the same coastal waters and ecosystems. The Santa Monica Bay is a sensitive and stressed ecosystem. Based on circulation and volumetric relationships, the combined once-through cooling of its three power plants consumes 13% of the nearshore water in the Santa Monica Bay every 6 weeks.⁷

In addition, the Bay is likely to suffer from three other categories of cumulative impacts:

- 1) Multiple effects from any given power plant (i.e. entrainment and thermal impacts dually affecting the same marine populations);
- 2) Effects from closely sited power plants (intakes from multiple power plants in a small area may have a greater impact than intakes from single facility); and
- 3) Effects of multiple uses within the coastal zone (i.e. combined impacts from fishing, sewage treatment plant effluent, stormwater runoff, and other anthropogenic impacts).

Clearly, all cumulative impacts must be examined to provide a complete assessment of the environmental impacts associated with cooling water intake systems (CWIS) at RBGS.⁸

Notably, the most recent impingement and entrainment study, conducted at Huntington Beach Generating Station, included an evaluation of cumulative impacts. Although there are concerns about the methodology used for this cumulative impact assessment, it plainly underscores and recognizes the importance of such an analysis. Following this example and learning from these mistakes, the Regional Board should require a cumulative impact assessment that is comprehensive and systematic to avoid the pitfalls encountered in Huntington Beach's study, including using a disproportionately large study area (the entire Southern California Bight), combining variable methods and frequencies of monitoring at each plant, and using incomplete entrainment data for each plant. The cumulative impact study at RBGS also should include assessment of a wide variety of species to account for both ecosystem functions and services. Additionally, the source water area should be realistic and representative of the potential impacts. Larvae found near Point Conception, while within the Southern California Bight, are not likely to be entrained by RBGS. Using Santa Monica Bay as the source water calculation for

⁶ Wat. Code §13142.5

⁷ CEC (2005) Staff Report: Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants, CEC-700-2005-013-AP-A, p.37

⁸ *Id.* p.26

Scattergood, El Segundo Generating Station, and RBGS will provide more precise results than using the entire Southern California Bight.

While, the proposed entrainment sampling design includes source water sampling, RBGS does not intend to use this data to study cumulative impacts. Instead, RBGS only plans to “coordinate” source water sampling with El Segundo Generating Station and Scattergood due to the close proximity of these power plants, and in order to design and scale restoration projects.⁹ The PIC fails to make any mention of the need for source water sampling to examine cumulative impacts.¹⁰ Moreover, the PIC states that RBGS will discontinue source water sampling if the courts decide to reject restoration as a Clean Water Act §316(b) compliance alternative.¹¹ Regardless of the court decision, source water sampling should be required for all entrainment characterization studies as it provides essential information for assessing cumulative impacts. Without source water sampling, cumulative impacts from multiple coastal power plants cannot be assessed.

We thus urge the Regional Board to require that RBGS pursue a cumulative impact analysis that accounts for all of the above considerations. In the case of RBGS, a true evaluation of ecosystem impacts is not possible without including a cumulative impact assessment. Further, if the Regional Board requires RBGS to conduct a Radius of Influence study similar to its recommended cumulative impact study for El Segundo Generating Station, its requirements must be clearly delineated. All categories of cumulative impacts (listed above) must be examined in the Radius of Influence study including those from other cooling water intake systems, multiple impacts from a single power plant, and impacts from other uses within the coastal zone.

3. The list and descriptions of proposed technologies is not sufficient

The list of proposed technologies discussed in the PIC is inadequate. By only considering two alternative technologies, RBGS preordains their preferred compliance alternative by failing to evaluate the spectrum of available technologies. RBGS only considers two alternate technologies- narrow-slot cylindrical wedgewire screens and fine-mesh rishoph traveling water screens. An analysis of more alternative technologies, including closed-cycle options, is needed to make an informed decision about the best alternative. In addition to providing a severely limited list of alternatives, the PIC fails to provide the economic and biological details of the feasibility analysis used to evaluate each technology.

There are many concerns with RBGS’s proposal to implement narrow-slot wedgewire screens. First, this technology has not yet been deployed in marine environments, and may be subject to high rates of biofouling. This technology uses an air-blast system to remove fouling debris, which has also not been tested in the ocean. The success of narrow slot wedgewire screens in marine environments is unknown, and consequently it should not be a viable alternative technology option for complying with entrainment reduction requirements. The analysis of

⁹ *MBC Applied Environmental Science* (August 11, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p13

¹⁰ *Id.* p.19

¹¹ *Id.* p.13

alternative technologies required by Clean Water Act §316(b) is not intended for experimental investigations. We support conducting pilot studies of this technology in the ocean, but Phase II facilities should be responsible for funding any preliminary analyses, and should not plan to use this alternate technology unless the pilot studies support its feasibility.

We also have concerns with RBGS's evaluation of the fine-mesh rishoph traveling water screen alternative. This technology was evaluated during the repowering study; however, the PIC fails to provide or discuss the results of this analysis. The normal design for this technology is an approach velocity of 0.5fps, however, the approach velocity at RBGS is around 1.0fps, and thus the effects of high velocity flow on impingement and entrainment survival must be understood for a variety of species and lifestages. Again, the cost of these studies should be covered by RBGS, and the facility should not plan to use this technology unless the pilot studies support its feasibility.

Further, while the PIC only evaluates two alternative technologies, it does not include any description of why closed-cycle options are not evaluated. RBGS explains that their preference for the restoration alternative to comply with the entrainment standards in Clean Water Act §316(b) is reason for the limited analysis. If this preferred compliance alternative is invalidated by the 2nd Circuit, RBGS anticipates providing a more detailed list of technologies, and proposes the possibility of initiating pilot studies examining alternative technologies in late 2006.¹² Delay of this analysis is unacceptable. Introducing restoration as a preferred compliance options does not preclude RBGS from providing a complete analysis of all available technologies.

RBGS's proposed evaluation of alternative technologies is far from adequate. It is unacceptable that dry cooling, closed cycle cooling, and hybrid cooling, as well as other environmentally-preferred options are not considered in the PIC. As stated above, New York requires its facilities to conduct a detailed evaluation of all alternative technologies, including closed-cycle cooling; the Regional Board has the authority to make the same requirements under Clean Water Act §316(b). To ensure that compliance alternatives are comprehensively evaluated, the Regional Board must require RBGS to provide a rigorous assessment of all alternative cooling technologies.

4. The list of target species is inadequate

The proposed list of target species for entrainment and impingement analyses is severely limited, including only a few commercially important and abundant species. It is not sufficient to restrict the list of target species to common, fished organisms. For impingement analyses, the proposed list of species includes all fish, crabs, shrimp, squid, octopus, and spiny lobster; while entrainment analyses propose to monitor all fish life stages beyond egg, *Cancer* crab, lobster, and squid larvae. Although these species are economically important and provide essential ecosystem functions, the PIC fails to address impingement and entrainment of other ecologically important species common to the Santa Monica Bay. Representative species that characterize

¹² EPRISolutions (August 2005) 316(b) Proposal for Information Collection for AES's Redondo Beach L.L.C. Generating Station, p.30

each niche should be included in the analysis, including predators, forage species, detritivores, and nutrient recyclers. Each of these species provides a unique ecosystem function.

In addition, the list of target species in the proposed PIC represents only taxa that have high abundance in historical entrainment and impingement samples. When assessing CWIS impacts, it is critical to include less populous species. Neglecting species that have low absolute entrainment and impingement is a fundamental flaw in the proposed study, as populations of these species may be smaller and yet experience a higher proportional impact. Small populations are less likely to exhibit resilience than large populations to the indiscriminate mortality caused by once-through cooling.

Sensitive species and those of high intrinsic value also should be included in the proposed entrainment and impingement study. Voluntary reporting illustrates that it is not unusual for marine mammals and sea turtles to suffer impingement. From 1988-2004, RBGS reported taking five California sea lions, ten harbor seals, and two green sea turtles. A similar plant (Scattergood) sited only a few miles away from RBGS, reported taking 58 California sea lions, two harbor seals, three green sea turtles, and one loggerhead sea turtle in the same time frame.¹³ Due to the voluntary nature of the reporting, these numbers are not verified by the responsible agency and have high uncertainty. We also believe that the numbers may be underestimated.

The take of protected species cannot be ignored. Take of marine mammals, sea turtles, tidewater gobies, bocaccio, canary and yelloweye rockfish, garibaldi, abalone, and various other sensitive species must be specifically planned for in the PIC and documented by RBGS. Ichthyoplankton and fish video surveys in the waters near RBGS report high abundance of garibaldi¹⁴; take of this and other sensitive species at RBGS cannot go unreported. The impingement and entrainment of any rare, threatened or endangered species should be recorded in detail, including the species, and if appropriate, size and weight of the organism.

In addition to providing an incomplete list of target species, the proposed entrainment study neglects fish eggs. The study considers the life stages of larval and adult fish, but fails to consider eggs. We agree with Tetra Tech that the presence of eggs should be documented in entrainment studies.¹⁵ Moreover, classification of eggs to the species level should be a priority in any entrainment analysis. CalCOFI data show a high abundance of fish eggs in south Santa Monica Bay.¹⁶ Furthermore, fish eggs comprise a large portion of the entrained organisms and the entrainment analysis results will be deficient without species-specific egg information. From 1974 to 1975 ichthyoplankton samples taken by the Vantuna Research Group identified fish eggs to the species level in King Harbor, demonstrating that the methods exist and have been

¹³ National Marine Fisheries Service Stranding Network (June 2005)

¹⁴ *MBC Applied Environmental Science* (August 11, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, pp.8-9

¹⁵ Los Angeles Regional Water Quality Control Board (October 21, 2005) Comments to Phase II 316(b) Proposal for Information Collection and Impingement Mortality and Entrainment Characterization Study Sampling Plan, El Segundo Power, LLC; El Segundo Generating Station, NPDES Permit No. CA001147, CI-4667, p.5

¹⁶ Moser (2001) [available at: http://www.energy.ca.gov/sitingcases/elsegundo/documents/applicants_files/2003-02-10_testimony/BIO-6-7.PDF]

employed in this region in the past.¹⁷ There are many methods available to identify fish eggs, including relatively simple rapid photographic surveys. These and other methods base egg identification on unique characteristics including size, shape, color, character of the yolk, presence/absence of oil globules, and character of the developing embryo.¹⁸ In the few exceptions where species-specific classification cannot be derived, an egg count should be provided for the unidentified samples. However, it is imperative that species-specific fish egg identification be conducted in entrainment studies.

5. The proposed methods for entrainment mortality sampling are insufficient and must be improved

Insufficient entrainment studies should no longer be acceptable at RBGS or any other once-through cooling facility. In the past, coastal power plants commonly downplayed the environmental impacts of entrainment. Recent studies at Moss Landing and Morro Bay have shown that CWIS previously thought to have no harmful biological impacts may actually kill 10-30% of fish larvae from individual species in the source water.¹⁹ These impacts can no longer be overlooked.

Thorough entrainment analyses have never been conducted at RBGS. A one year entrainment study was conducted at RBGS in 1979, involving monthly sampling. This study is severely outdated and many of the natural populations, particularly fish, have changed since it was conducted.²⁰ Additionally, units are not provided along with the data from this study (reported in Table 2-1), so it is unclear whether the data represent the number of individuals entrained or the biomass of entrained organisms. This ambiguity makes it difficult to understand the magnitude of the facilities' ecosystem impacts. Furthermore, the samples were taken from the intake riser, similar to early studies at Ormond Beach and San Onofre. This method assumes that each sample is an unbiased estimator of actual entrainment, and may not generate representative pump samples.²¹ Due to the uncertainty of how well the method samples entrainment, the data should not be used for any baseline calculations.

Further, elements within the ocean ecosystem (i.e. species distribution, currents, temperature, wind, nutrient concentrations) are highly variable. A one-year study will not provide sufficient results due to the highly variable nature of the marine environment. A longer-term study would more accurately characterize the entrainment impacts of RBGS by examining trends through

¹⁷ MBC *Applied Environmental Science* (August 11, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p.9

¹⁸ Murdoch et al. (1990) Rapid Shipboard Identification and Enumeration of Pelagic Marine Fish Eggs by a Simple Photographic Technique, *New Zealand Journal of Marine and Freshwater Research*, vol 24: p.137-140

¹⁹ California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California's Coastal Power Plants Using Once-Through Cooling, p.4

²⁰ California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California's Coastal Power Plants Using Once-Through Cooling, p.4

²¹ MBC *Applied Environmental Science* (August 11, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, pp.53, 62

time. As required for El Segundo Generating Station, the Regional Board should call for RBGS to conduct a multiyear entrainment study.²²

6. Methods for impingement mortality sampling are insufficient

RBGS has conducted monthly impingement sampling during normal plant operations since the early 1970s. The PIC proposes to use this data to calculate a baseline for future impingement sampling.²³ The new Clean Water Act §316(b) regulations allow for the use of historical data to estimate a baseline, but require the PIC to show “the extent to which the data represent current conditions.”²⁴ RBGS’s PIC fails to demonstrate how the historical impingement data is representative of current conditions. Additionally, historic impingement sampling at many coastal power plants is inadequate.²⁵ To grant use of this historical data, the Regional Board should require RBGS to analyze and illustrate the relevance of this historical data to present conditions. We believe that the changes in environmental conditions over time, also known as “shifting baselines,” skew the accuracy of historical data. Consequently, these historical studies should not be used as a baseline for current analyses.

Moreover, similar to historic entrainment data, the impingement data presented in the PIC (Table 2-2) provides no units. It is impossible to understand the magnitude of ecosystem impacts without understanding whether the data represent biomass or number of individuals impinged. We encourage the Regional Board to require that data be more clearly exhibited in the revised PIC.

As stated above, we recommend that the impingement study extend longer than one year to reduce the variability and uncertainty of impingement data. The PIC proposes to estimate the seasonality of impinged organisms at RBGS²⁶; however seasonality cannot be accurately determined in one year. A multiyear study is needed to examine seasonal trends at a particular site to reduce uncertainty by showing trends through time, allowing for comparison between years, and allowing for determination of any outliers in the data.

RBGS also proposes to conduct additional velocity cap impingement studies. The PIC plans to conduct four studies from August 21, 2006 to October 2, 2006, citing this time frame as the period with the highest mean monthly normal operation impingement from 2000 to 2004.²⁷ The proposed sample period is severely limited. It only examines seven weeks out of the year and is not based on seasonal distributions of fish and invertebrates. A comprehensive characterization

²² Los Angeles Regional Water Quality Control Board (October 21, 2005) Comments to Phase II 316(b) Proposal for Information Collection and Impingement Mortality and Entrainment Characterization Study Sampling Plan, El Segundo Power, LLC; El Segundo Generating Station, NPDES Permit No. CA001147, CI-4667, p.5

²³ MBC *Applied Environmental Science* (August 11, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p.12.

²⁴ Clean Water Act 316(b), §125.95(b)(1)(ii)

²⁵ California Energy Commission (2005) Issues and Environmental Impacts Associated with Once-Through Cooling at California’s Coastal Power Plants: Staff Report. Appendix A: An Assessment of the Studies Used to Detect Impacts to Marine Environments by California’s Coastal Power Plants Using Once-Through Cooling, p.4

²⁶ MBC *Applied Environmental Science* (August 11, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p.15

²⁷ *Id.* p.18

of velocity camp impingement requires regular sampling throughout the year to document seasonal variation in impingement abundance and diversity. Additionally, a year-long velocity cap study will account for species with low absolute impingement. As stated earlier species with low absolute impingement must be considered because small populations experience a higher proportional impact and are less likely to exhibit resilience than large populations.

7. The proposed use of the site-specific alternative to BTA disregards comprehensive economic analysis

In the PIC, RBGS expresses a preference for using the site-specific alternative to BTA to meet the required performance standards under Clean Water Act §316(b).²⁸ As stated above, the PIC is supposed to be an information-gathering tool and this determination is premature. Initial studies that evaluate all possible alternatives are necessary before preferred options are chosen.

After the initial studies are performed, if RBGS chooses to pursue the cost-cost or cost-benefit approach, the Regional Board must ensure that a rigorous and comprehensive cost-benefit analysis is conducted. RBGS should be required to demonstrate and document why they believe that costs of using BTA to achieve reductions in impingement and entrainment are too high in the context of power plant economics. Such an analysis must include direct and indirect non-market and market values for both industry and the environment. Any consumptive use valuation should examine all of the associated costs, including travel, bait, tackle, boat, gas, lodging, and others. Furthermore, non-market values cannot be ignored in the environmental economic analysis. Only a small fraction of species within the sea have direct market value, but almost all species present within close vicinity of intake pipes will be impacted, directly or indirectly, by once-through cooling. RBGS states that evaluation of non-use benefits is not necessary based on the current federal regulations;²⁹ however, this statement is inaccurate. The EPA demonstrates the importance of including non-use values in plant-related economic analyses in Clean Water Act 316(b) Supplemental Chapter D1 by providing methods to include non-use benefits quantitatively in the cost-benefit analysis.³⁰ regulations states that the economic analysis must "...consider the magnitude and character of the ecological impacts implied by the results of the impingement and entrainment mortality study and any other relevant information [including, but not limited to, threatened and endangered species]." Non-use values cannot be overlooked in any economic analyses conducted by RBGS. Furthermore, all non-market and non-use valuation must be calculated in a reasonable manner.

8. The proposed methods to evaluate the environmental effects of impingement and entrainment are outdated

RBGS does not justify why it is not using the most recent and comprehensive modeling techniques to assess the environmental effects of impingement and entrainment. The PIC proposes to use a variety of methods to assess the effects of the cooling water intake system on

²⁸ EPRISolutions (August 2005) 316(b) Proposal for Information Collection for AES's Redondo Beach L.L.C. Generating Station, p.26

²⁹ *Id.* p.7

³⁰ USEPA (2004) Clean Water Act §316(b) Phase II Final Rule – EBA, Part D: National Benefit-Cost Analysis. D1: Comparison of National Costs and Benefits, p.3

impinged and entrained species, including adult equivalent loss (AEL), fecundity hindcasting (FH) and empirical transport modeling (ETM). These methods are outdated and several newer approaches are far more appropriate. Habitat production foregone (HPF) is the most current model used to assess the environmental impacts of CWIS and should be used to quantify impingement and entrainment. The most recent impingement and entrainment analyses for coastal power plants, including Huntington Beach, use the HPF method. The PIC defends the outdated models by stating, “The advantage of these demographic modeling approaches is that they translate losses into adult fishes that are familiar units to resource managers.”³¹ However, HPF also is consistent with these methods and translates the same complex demographic information into equally familiar units - the area of habitat lost due to CWIS.³² HPF considers impingement and entrainment losses on an ecosystem level rather than an individual scale by identifying the amount of habitat needed to produce organisms that are ecologically equivalent to those that are lost.

In addition, HPF is useful for assessing cumulative impacts, as well as those on multiple species affected by CWIS. If one assumes that proportional mortalities and source waters for the monitored larvae are similar to those of larvae that are not assessed, then HPF is a more complete and realistic estimate of the adverse impacts caused by entrainment than AEL or FH.³³ By using HPF, RBGS could also estimate the area of specific habitat lost, for example rocky reef or benthic sediments, by examining specific species recorded in the entrainment and impingement studies. At present, RBGS does not justify why it is not using HPF. The Regional Board should require RBGS to use either the HPF method to quantify their environmental impacts, or to provide credible justification as to why they are not using this advanced methodology.

To conduct HPF modeling, source water sampling is essential. Because source water sampling is used to scale mitigation, the PIC states that RBGS will discontinue source water sampling if the courts reject restoration as a Clean Water Act §316(b) compliance alternative.³⁴ Regardless of the court decision, source water sampling should not be eliminated from the proposed study. Source water sampling is necessary to fully understand the ecosystem impacts of entrainment and impingement through HPF modeling and assess cumulative impacts. By proposing to eliminate source water sampling from future studies, RBGS taking a step backward in understanding their facilities’ environmental impacts.

9. Impingement trends during heat treatments need further exploration

At many coastal power plants, impingement is significantly higher during heat treatments than during normal operations. Historically, heat treatments at El Segundo Generating Station account for 90% of impingement and are consistently higher than impingement during normal

³¹ MBC *Applied Environmental Science* (August 11, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p.26

³² Strange et al (2004). The Habitat-Based Replacement Cost Method for Assessing Monetary Damages for -Fish Resource Injuries. *Fisheries* 29(4), p.17-24

³³ CEC (2005) Staff Report: Issues and Environmental Impacts Associated with Once-Through Cooling at California’s Coastal Power Plants, CEC-700-2005-013-AP-A. p.92

³⁴ MBC *Applied Environmental Science* (August 11, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p.13

operations.³⁵ However, impingement at RBGS does not follow a consistent pattern. During some years, the reported impingement is 50 times higher during heat treatments as compared to normal operations, while in other years impingement during normal operations is 40 times higher than heat treatments.³⁶ It is interesting that two coastal power plants in such close proximity have such different trends in impingement during heat treatments. The discrepancy between impingement during heat treatments and normal operations warrants a separate impingement analysis. RBGS should be required to go beyond heat treatment monitoring and evaluate any technical or operational changes that can be made to reduce the high mortality during heat treatments. We also urge RBGS to explain any significantly elevated impingement events and the significance of the difference between normal operations and heat treatments in future studies.

10. RBGS fails to acknowledge consultation with agencies

The regulations require each facility to submit a “summary of past or ongoing consultations with appropriate Federal, State, and Tribal fish and wildlife agencies that are relevant to this Study, and a copy of written comments received as a result of such consultations.”³⁷ The rule clearly states that all communications regarding the environmental impacts related to this study must be provided in the PIC; therefore consultation regarding all impingement and entrainment incidents must be documented in the PIC. However, RBGS states that it has had no consultations with pertinent agencies in relation to its environmental impacts.³⁸

As discussed above, RBGS documented the take of marine mammals and sea turtles by its facility from 1998-2004. It is likely that RBGS consulted with the National Marine Fisheries Service and other agencies regarding this take. Thus, we have misgivings that RBGS is truthful in stating that it has not consulted with agencies regarding its impacts from impingement and entrainment. We urge the Regional Board to require RBGS to provide record of all communications with agencies, including NOAA and the Department of Fish and Game, regarding the facilities’ environmental impacts.

Conclusion

Thank you for the opportunity to comment on the Redondo Beach Generating Station PIC and impingement and entrainment characterization studies. As described in detail above, we strongly urge the Regional Board to require RBGS to revise its PIC and provide a more thorough and accurate study outline. The PIC is designed to be an informational gathering tool, and thus, RBGS must comprehensively assess all alternative technologies and compliance options. Without doing so, the PIC is incomplete. We also encourage the Regional Board to follow the upcoming study closely to see that the methods, results, and quality control program receive adequate peer and independent review, ensuring the most unbiased analysis possible. This and

³⁵ Tenera Environmental (2005) Impingement Mortality and Entrainment Characterization Study Sampling Plan, Prepared for: El Segundo Power, LLC. p.8

³⁶ MBC *Applied Environmental Science* (August 11, 2005) Summary of Existing Physical and Biological Information and Impingement Mortality and Entrainment Characterization Study Sampling Plan, p.7

³⁷ C.F.R. §125.95(b)(1)(iii)

³⁸ EPRISolutions (August 2005) 316(b) Proposal for Information Collection for AES’s Redondo Beach L.L.C. Generating Station, p.29

the many other PICs that come before the Regional Board form a critical blueprint for understanding the gross impacts of coastal power plants in the Los Angeles region. Please contact us if you have any questions regarding our comments.

Sincerely,

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